

28 DEC 1981

MEMORANDUM FOR THE RECORD

SUBJECT: Building Planning Staff Tour of New Computer/Office
Facilities of McDonnell Douglas Corporation in St. Louis,
Missouri

STAT 1. On 15 December 1981, [] Deputy Director of Logistics (DD/L), and [] and [] of the Building Planning Staff, OL (BPS/OL), traveled to St. Louis to tour the referenced facilities. This new computer/office facility houses the McDonnell Douglas Automation Company (MCAUTO) and was completed in November 1980. The Agency representatives were graciously hosted by the following MCAUTO personnel:

Robert V. Coleman, Vice President, Telecommunications
Services

Bill J. Scheller, Computer Services Administrator

Dave F. Morgan, Manager, Facilities Engineering

2. The facility, which houses over 2,500 people, has over 800,000 square feet of gross area which includes 121,000 net square feet of computer equipment space; 137,000 net square feet of office space for computer operations support personnel; and 295,000 net square feet of office space for management, administration, marketing, consultants, and technicians. Space is also included for a cafeteria, an energy building, and two unique utility galleries which support the computer equipment space. These galleries extend the entire length of both sides of the computer center and are visible from the entrance to the computer center.

3. The design development was begun in 1978, and through implementation of fast track construction procedures, construction was started in January 1979. The firm of Hellmuth, Obata & Kassabaum was engaged as the architect/engineer (A/E), who in turn employed William Tao & Associates, Inc. as consultants for the mechanical and electrical design. As part of the fast track construction methodology, McCarthy Brothers, a construction management firm, negotiated a cost plus fee contract with a guaranteed maximum in lieu of a fixed price general construction contract. This fast track construction resulted in a January 1979 ground breaking and November 1980 initial occupancy. The cost of the facility in 1980 dollars was \$70 million, which equates to \$85/sq ft for the total facility and \$65/sq ft for the building construction.

OL 1 5306

4. Although the A/E contract was administered through corporate McDonnell Douglas, it appears that MCAUTO management was thoroughly involved throughout the design process. MCAUTO directed the A/E to develop the building design based on the following priorities:

- a. Provide maximum reliability and flexibility for the computer center.
- b. Provide for energy conservation.
- c. Provide a campus type atmosphere.
- d. Provide for orderly expansion of the computer and office facilities.
- e. Provide interior amenities to improve employee morale.
- f. Provide non-aerospace design.

5. As a result of these requirements, the following features were incorporated into the facility:

- a. Raised flooring with 11-foot-high ceiling throughout the computer equipment areas.
- b. Structural bays of 40 feet x 60 feet in the computer equipment area and 40 feet x 40 feet in the office areas.
- c. Vertical access shafts measuring 4 feet x 4 feet at each column location in the computer equipment area.
- d. Windows only on the north and south exposures with double paned silver reflective glass.
- e. Exterior wall panels are insulated aluminum with a silver finish.
- f. Lighting intensity is approximately 60-foot candles. Light fixtures have 15-foot "pigtail" to permit easy relocation and have three tube on/off control switches. Task lighting is provided in each office landscape cubicle.
- g. Irma type roof which has the insulation on top rather than below the roofing felts.
- h. Office landscaping type partitions for all personnel. Full height office partitions are only provided for supervisory personnel who equate to Office of Logistics division chiefs.
- i. Power, data, and telephone are distributed via an underfloor duct system similar to that which exists at the

Agency's Headquarters Building. The system is more satisfactory because plug-in is accomplished below the floor.

j. With some operational exceptions, terminals are clustered in separate areas.

k. The average space allotment is 140 sq ft/person overall and 120 sq ft/person at the working office level.

l. Interior full height partitions are a metal faced demountable type manufactured by Hausserman Corporation, which cost approximately \$75/lin ft.

m. Winter heating is satisfied by excess heat recovered by a tube bundle loop in one of the chillers. One backup electric boiler is available for emergency needs.

n. The 150,000 gallon water storage tank is insulated and provides emergency chilled water for the cooling system which supports the computer center.

o. The environment of the office area is controlled by an Energy Management System, and the computer area has a Facilities Monitoring System.

p. The facility is 100 percent sprinklered.

6. The management and operational approach to power support was particularly interesting, and the following items outline the system and its operations.

a. Incoming electrical service is supplied by two 34 1/2 KV lines from the local power company. An automatic switchover is provided, and one line has adequate capacity to carry the facility.

b. Diesel generators are sized to support 50 percent of the computer equipment and all life safety items.

c. Operations personnel prioritize their needs for computer equipment and develop an orderly program for shedding load during a power outage.

d. UPS equipment provides power smoothing as well as a 15-minute emergency backup. However, during recent "rundown" tests, the batteries operated for 60 minutes. UPS equipment is manufactured by Exide and has provided very reliable operations.

e. UPS batteries can be charged by the diesel generators during a power outage.

f. Management has set a policy of 98 percent reliability for the total computer system, and all components including facilities support publish weekly reliability reports.

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[REDACTED]

8. Operations and maintenance (O&M) activities at the facility were observed to be excellent and are performed by a 70 person "in-house" staff. This staff is also responsible for alterations, but it appears that to date partition changes have been minimal. MCAUTO officials advised that the excellent O&M efforts are not a result of the new facility but rather an esprit de corps within the O&M staff.

9. During the tour of the MCAUTO facilities, the Agency representatives were introduced to Bruce R. Yoder, Director of Marketing for the East Coast. Since MCAUTO does not have corporate data on file with the Agency, they were invited to submit such material through the DD/L, who in turn will have it forwarded to appropriate Agency offices.

10. Following the tour of MCAUTO, Jim Alexander introduced Paul Czysz of McDonnell Aircraft Company to [REDACTED] Mr. Czysz was the Agency contact who arranged the tour of MCAUTO facilities. During the discussion with Mr. Czysz, BPS/OL learned of [REDACTED] that McDonnell Aircraft has successfully used to provide [REDACTED] Mr. Czysz offered to provide a sample of this material for BPS/OL.

11. In summary, the trip was very worthwhile and provided BPS/OL an insight into the design priorities and operational/support interface that exists in a large private corporation. As in any construction endeavor, all occupant priorities were not accomplished with equal degrees of success, but in this case they were all addressed and the end product well received by MCAUTO.

[REDACTED]

Building Planning Staff, OL

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